

IN THE CLAIMS:

Please amend the claims as follows:

1. (Currently amended) A water treatment system for treating water, ~~said the~~ water treatment system comprising:

a primary water treatment station outputting treated water; and

~~a solid-based sulfurous generator downstream from said primary water treatment station for producing~~ outputting aqueous sulfurous acid for further treatment of the ~~to the treated~~ water.

a pump comprising a variable frequency drive, the pump generating a water flow through the generator, the water flow being characterized by a water flow rate;

a pH sensor to ascertain the pH of the treated water; and

a control system connected to the pH sensor to receive a signal representative of the pH, compare the signal to a set point for a desired water pH, and provide an output control signal to the variable frequency drive to vary the water flow rate and thereby control the concentration of sulfurous acid in the treated water.

Claims 2-4 (Cancelled).

Claims 5-11 (Withdrawn).

12. (Currently amended) The apparatus according to of claim 1, wherein ~~said the~~ primary waste water treatment station ~~includes~~ comprises settling tanks and holding cells.

13. (Currently amended) The apparatus according to of claim 1, further ~~including~~ comprising a secondary water treatment station ~~downstream from said~~ to receive and process the treated water from ~~the~~ primary water treatment station.

14. (Currently amended) The apparatus according to of claim 13, wherein ~~said~~ the secondary water treatment station ~~includes~~ comprises aeration tanks and clarifiers.

15. (Currently amended) The apparatus according to of claim 13, further ~~including~~ comprising a tertiary water treatment station ~~downstream from said~~ to receive and process the treated water from ~~the~~ primary water treatment station.

Claims 16-37 (Withdrawn).

38. (Currently amended) A water treatment system for treating water, ~~said~~ the water treatment system comprising:

a primary water treatment station outputting treated water;

~~a solid-based sulfurous generator downstream from said primary water treatment station for producing~~ outputting a stream of aqueous sulfurous acid for further treatment of the into the treated water, ~~said solid-based sulfurous~~ the generator includes comprising a hydraulic air inlet shut off valve safety system for automatically closing an air inlet to the generator in the event a water flow through the generator is interrupted ~~reducing the combustion air to said sulfurous generator if water stops being delivered to said sulfurous generator~~; and

a control system for monitoring the pH of the treated water to adjust ~~the~~ a water flow rate through ~~said solid-based sulfurous~~ the generator to achieve ~~the~~ a desired concentration of sulfurous acid in the treated water being treated.

39. (Currently amended) The apparatus ~~according to~~ of claim 38, wherein ~~said~~ the control system includes a pH sensor for ascertaining the pH of the treated water being treated; a controller connected to ~~said~~ the pH sensor for receiving a signal representative of the pH, comparing ~~said~~ the signal to a set point for a desired water pH, and providing an output control signal, ~~which affects to~~ adjust a flow control means ~~connected to said controller for adjusting to vary~~ the water flow rate through ~~said solid-based sulfurous~~ the generator to achieve ~~the desired concentration of sulfurous acid in the water being treated~~.

40. (Currently amended) The apparatus according to ~~of~~ claim 39, wherein said the flow control means ~~includes~~ comprises a variable frequency drive ~~for controlling the speed of the~~ to control a pump ~~that delivers~~ delivering water to said solid-based sulfurous the generator, said pump being located between said primary water treatment station and said solid-based sulfurous generator.

Claims 41-46 (Withdrawn).

47. (Currently amended) The apparatus according to ~~of~~ claim 38, wherein said the primary wastewater water treatment station ~~includes~~ comprises settling tanks and holding cells.

48. (Currently amended) The apparatus according to ~~of~~ claim 38, further including comprising a secondary water treatment station downstream from said receiving and processing the treated water from the primary water treatment station.

49. (Currently amended) The apparatus according to ~~of~~ claim 48, wherein said the secondary water treatment station ~~includes~~ comprises aeration tanks and clarifiers.

50. (Currently amended) The apparatus according to ~~of~~ claim 48, further including comprising a tertiary water treatment station downstream from said receiving and processing the treated water from the primary water treatment station.

51. (Currently amended) The apparatus according to of claim 38, wherein said solid-based sulfurous the generator includes comprises a solid sulfur supply, a burning chamber for burning said the solid sulfur supply, an air inlet for providing air to said burning chamber, and a hot SO_2 -gas an outlet to output sulfur dioxide gas from the burning chamber.

52. (Currently amended) The apparatus according to of claim 51, wherein said the burning chamber further includes comprises a one-piece, water-cooled bottom plate for solidifying molten sulfur in said the burning chamber to form a seal.

53. (Currently amended) The apparatus according to of claim 52, wherein said sealing the water-cooled bottom plate is removable for cleaning said to clean the burning chamber.

54. (Currently amended) The apparatus according to of claim 51, wherein said the burning chamber further includes comprises an igniter.

55. (Currently amended) The apparatus according to of claim 54, wherein said the igniter is a call-rod inserted into said the burning chamber.

56. (Currently amended) The apparatus according to of claim 51, further including comprising a mixing and collection chamber connected to said hot SO_2 -gas the outlet.

57. (Currently amended) The apparatus ~~according to~~ of claim 51, further including comprising a negative pressure source downstream from said ~~hot SO₂ gas~~ the outlet for drawing ~~the SO₂ in~~ gas from said the burning chamber and ~~fresh combustion~~ air into said the burning chamber through the air inlet.

Claims 58-62 (Withdrawn).

63. (Currently amended) The apparatus ~~according to~~ of claim ~~61~~ 57, further including comprising a scrub tower downstream from said ~~hot SO₂ gas~~ the outlet for ~~capturing the SO₂ to~~ capture sulfur dioxide gas.

64. (Currently amended) The apparatus ~~according to~~ of claim 63, wherein said the scrub tower includes comprises a ~~high surface area~~ large reaction surface and a supply of water for reacting with the SO₂ sulfur dioxide gas.

65. (Currently amended) The apparatus ~~according to~~ of claim 64, wherein said ~~high surface area~~ the large reaction surface is a moisture-resistant material.

66. (Currently amended) The apparatus ~~according to~~ of claim 65, wherein said the moisture-resistant materials are material comprises rashing rings formed from plastic tubing.

67. (Currently amended) The apparatus ~~according to~~ of claim 66, wherein said the rashing rings have a length between about 0.5 and 1.5 inches and a diameter between about 0.5 and 1.5 inches.

68. (Currently amended) The apparatus ~~according to~~ of claim 64, wherein ~~the~~ a water flow rate of ~~said water into said~~ through the scrub tower is greater than about 80 GPM at greater than about 20 PSI.

69. (Currently amended) The apparatus ~~according to~~ of claim 63, wherein said the scrub tower further ~~includes~~ comprises a vapor recovery means.

70. (Currently amended) The apparatus ~~according to~~ of claim 69, wherein said the vapor recovery means ~~includes~~ comprises an air inlet for providing additional air into said the scrub tower, an air mover for removing air and vapors from said the scrub tower, and a percolation chamber for receiving and dissipating said air and vapors removed from the scrub tower.

71. (Currently amended) The apparatus ~~according to~~ of claim 70, wherein said the air mover is a water aspirator.

72. (Withdrawn).

73. (New) A water treatment system for treating water, the water treatment system comprising:
- a primary water treatment station outputting treated water; and
 - a generator producing aqueous sulfurous acid for output to the treated water; and
 - a flow control means comprising a variable frequency drive for controlling water flow through the generator and thereby controlling the concentration of sulfurous acid in the treated water.
74. (New) The water treatment system of claim 73, wherein the flow control means is selected from the group consisting of a pump and a valve.

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☒ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.